

# PATENT SPECIFICATION

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## DRAWINGS ATTACHED

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## (54) LAMINATED BUS BAR ASSEMBLIES

(71) We, GEORGE ELLISON LIMITED, a British Company, of Wellhead Lane Works, Wellhead Lane, Perry Bar, Birmingham, do hereby declare this invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to laminated bus bar assemblies for use in electrical distribution boards and to such distribution boards.

A laminated bus bar assembly in accordance with the invention comprises first and second flat conductors arranged in spaced co-planar relationship each having a plurality of finger portions projecting towards the other, a first insulating gasket co-planar with the first and second conductors and shaped to surround said conductors, a first insulating layer secured to one face of said first gasket and to said first and second conductors, a second insulating layer secured at one face to the other face of said first gasket and to said first and second conductors, a third conductor lying against the other face of said second insulating layer and in register with said finger portions, a second insulating gasket co-planar with said third conductor and secured to said second insulating layer and a third insulating layer secured to and facing said third conductor and said second gasket, contact portions on said finger portions being accessible through holes in the first insulating layer and contact portions on said third conductor being accessible through aligned holes in the first and second insulating layers and said first gasket.

Reference is now made to the accompanying drawings in which Figure 1 is an elevation of an example of a laminated bus bar assembly in accordance with the invention, Figure 2 is an enlarged fragmentary section on the line 2-2 in Figure 1 and Figures 3 and 4 are respectively cross-sections on lines 3-3 and 4-4 in Figure 2, but on the same scale as Figure 1.

The assembly shown is intended for use in a miniature circuit breaker distribution board. The circuit breakers (not shown), are to be mounted in pairs on the board with the

pairs sequentially connecting the three phases of the supply to the respective circuits. The board may also include three phase breakers.

The assembly comprises first and second flat conductors 10 and 11 positioned in complementary holes in a first insulating gasket 12. The gasket 12 and the conductors 10 and 11 are co-planar and of the same thickness. Each of the conductors 10, 11 consists essentially of a flat strip with finger portions 10a, 11a projecting from it towards the other conductor.

The gasket 12 and the conductors 10 and 11 are sandwiched between first and second insulating layers 13 and 14 which are adhesively secured in position.

A third conductor 15 (see Figure 4) in the form of a flat strip of metal lies against the second insulating layer 14 behind the finger portions 10a, 11a. An insulating gasket 16 surrounds the conductor 15 and is adhesively secured to the layer 14. The laminated assembly is completed by a third insulating layer 17 adhesively secured to the gasket 16 and the conductor 15.

For making electrical connections to the conductors stems 18, 19 are secured to the finger portions 10a, 11a and to the conductor 15 respectively, the stems 19 being slightly longer than the stems 18. The stems 18 extend through somewhat oversize holes in the layer 13 whilst the stems 19 extend through aligned holes in the layers 13, 14 and in portions of the gasket 12 lying between the finger portions 10a, 11a. It will be seen from Figure 1 that the stems are in pairs and are equally spaced along the assembly. The stems 18, 19 are used for connecting the conductors to the circuit breakers and, for this purpose each is formed at its free end with a tapped bore to receive a captive screw on the circuit breaker terminal.

For connecting the conductors to the supply there are bosses 20 at one end of the laminated assembly. These bosses are secured to the three conductors respectively and extend through holes in the insulation as do the stems 18, 19.

In the present example the stems and bosses are connected to the conductors by

brazing or silver soldering, each stem or boss having at its end a projection, (for example 18a in Figure 2) which fits in a drilling in the conductor for location.

- 5 The arrangement described is simple, relatively inexpensive to manufacture and is fully insulated except where connections are to be made to the conductors.

WHAT WE CLAIM IS:—

- 10 1. A laminated bus bar assembly comprising first and second flat conductors arranged in spaced co-planar relationship each having a plurality of finger portions projecting towards the other, a first insulating gasket co-planar with the first and second conductors, a first insulating layer secured to one face of said first gasket and to said first and second conductors, a second insulating layer secured at one face to the other face of said first gasket and to said first and second conductors, a third conductor lying against the other face of said second insulating layer and in register with said finger portions, a  
25 second insulating gasket co-planar with said

third conductor and secured to said second insulating layer and a third insulating layer secured to and facing said third conductor and said second gasket, contact portions on said finger portions being accessible through holes in the first insulating layer and contact portions on said third conductor being accessible through aligned holes in the first and second insulating layers and said first gasket.

2. A laminated bus bar assembly as claimed in Claim 1 in which there is a plurality of connector stems secured to said contact portions respectively and projecting from a free face of the assembly.

3. A laminated bus bar assembly substantially as hereinbefore described with reference to and as shown in the accompanying drawings.

MARKS & CLERK,  
Chartered Patent Agents,  
Agents for the Applicants.

Reference has been directed in pursuance of Section 9, subsection (1) of the Patents Act, 1949, to patent No. 1,030,283.

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COMPLETE SPECIFICATION

4 SHEETS

*This drawing is a reproduction of  
the Original on a reduced scale*  
Sheet 1

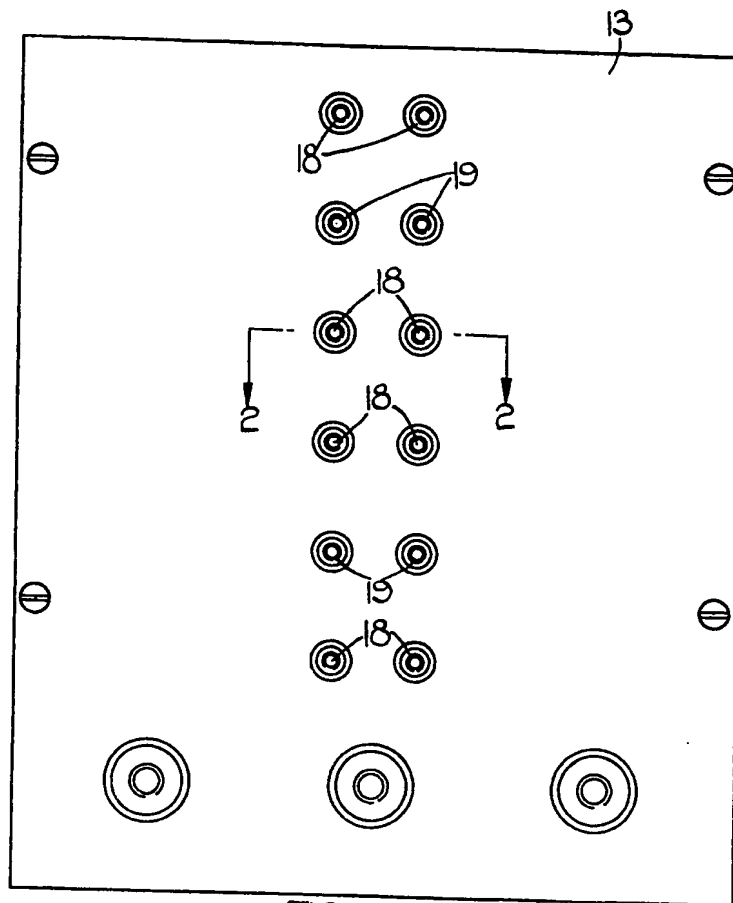
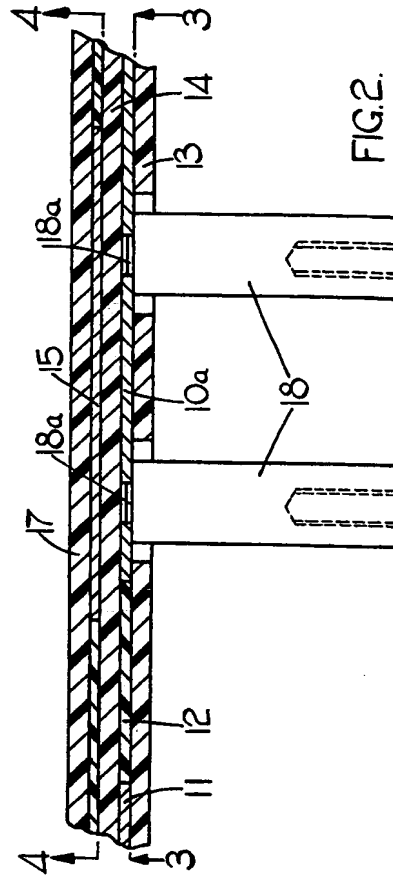
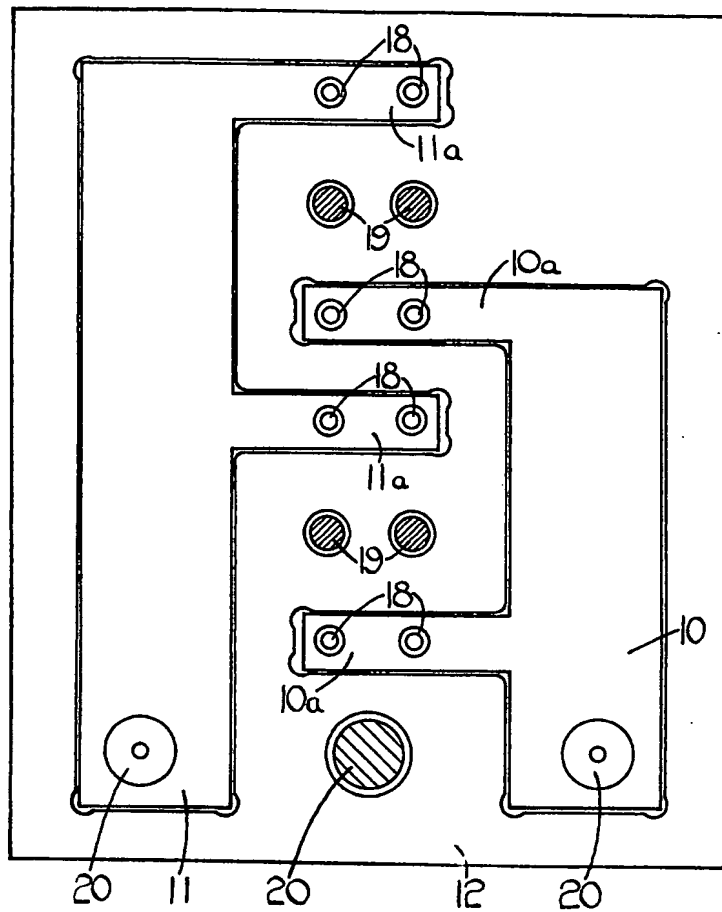


FIG. 1.





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COMPLETE SPECIFICATION

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Sheet 4

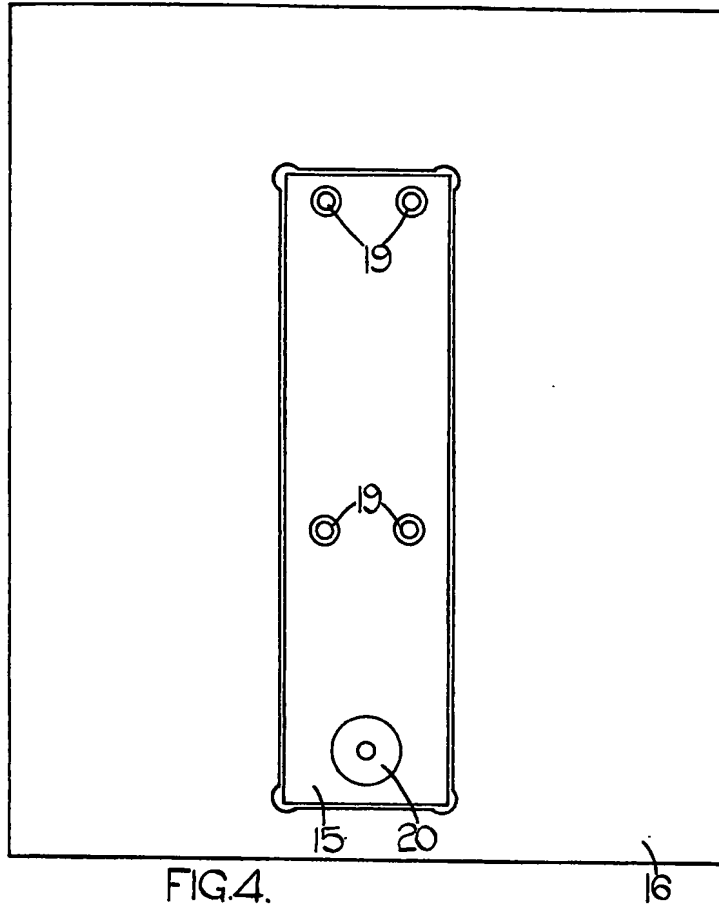


FIG. 4.